

ABSTRACT

5 Plant nucleotide pyrophosphatase/phosphodiesterase (NPPase), method of production, use in the manufacture of testing devices and in the production of transgenic plants.

10 NPPase is an enzyme that catalyses the hydrolysis of a wide range of small molecules with phosphodiester and phosphosulphate bonds, in particular ADPG (adenosine diphosphate glucose) and APS (adenosine 5'-phosphosulphate). The enzyme obtained from plant extracts is used in assay devices for determining levels of nucleoside diphosphate sugars, based either 15 on the sugar-1-phosphate released, or on the nucleoside monophosphate, both of which are products formed by the reaction catalysed by NPPase, as well as the detection of sulphonucleotides such as 3'-phosphoadenosine 5'-phosphosulphate (PAPS) and APS. The amino acid sequence 20 of the enzyme is also described, as well as the nucleotide sequence of a complete cDNA and another incomplete cDNA. Finally, it describes the production of transgenic plants that overexpress NPPase and that have a high content of sugars, low content of starch 25 and cell-wall polysaccharides and high resistance to high concentrations of salts and high temperature.